

Patent claims

1. An electromagnetic switching device, in particular a contactor or a power circuit breaker, with a housing (6+7), a drive solenoid (1), a yoke (2), an armature (3) and at least one contact (4),
  - the drive solenoid (1), the yoke (2), the armature (3) and the at least one contact (4) being mounted in the housing (6+7),
  - the drive solenoid (1), the yoke (2) and the armature (3) being inductively intercoupled, so that, when an inrush current (I) is applied to the drive solenoid (1), the armature (3) can be displaced into a pickup position,
  - the displacement of the armature (3) into the pickup position allowing the contact (4) to be directly or indirectly actuated,  
characterized in that the yoke (2) and/or the armature (3) contains or contain pulverulent magnetic material (9).
2. The switching device as claimed in claim 1, characterized in that the drive solenoid (1) and the yoke (2) are cast with each other by means of a casting compound (12).
3. The switching device as claimed in claim 1 or 2, characterized in that the yoke (2) and the housing (6) are cast with each other by means of a casting compound (12).
4. The switching device as claimed in claims 2 and 3, characterized in that the drive solenoid (1), the yoke (2) and the housing (6) are cast with each other by means of a unitary casting compound (12).

5. The switching device as claimed in claims 2, 3 or 4, characterized in that the casting compound (12) is permanently elastic.
6. The switching device as claimed in one of the above claims, characterized
  - in that the housing (6+7) comprises an upper housing part (7) and a lower housing part (6), which are detachably connected to each other,
  - in that at least the drive solenoid (1) and the joke (2) are mounted in the lower housing part (6) and
  - in that the upper housing part (7) and/or the lower housing part (6) consists or consist at least partly of a casting material (13).
7. The switching device as claimed in claim 6, characterized in that the casting material (13) is a hard casting material.
8. The switching device as claimed in claim 6 or 7, characterized in that fastening elements (8) for connecting the upper housing part (7) to the lower housing part (6) to each other are arranged in the casting material (13).
9. The switching device as claimed in claim 6, 7 or 8, characterized in that fastening elements (14) for connecting the lower housing part (6) to a fastening surface (15) are arranged in the lower housing part (6).
10. The switching device as claimed in one of the above claims, characterized in that the pulverulent magnetic material (9) is sintered material.
11. The switching device as claimed in one of the above claims, characterized

- in that the pulverulent magnetic material (9) is mixed with a polymer compound, for example epoxy resin.
12. The switching device as claimed in one of the above claims, characterized in that the pulverulent magnetic material (9) surrounds a soft iron core (11), a highly permeable material (11) and/or a permanent magnet (12).
13. The switching device as claimed in one of the above claims, characterized in that a sensor (16), which is inductively coupled to a conductor (5) connected to the contact (4) by means of a coupling element (17) containing a pulverulent magnetic material (9), is arranged in the housing (6+7).
14. The switching device as claimed in claim 13, characterized in that the sensor (16) is formed as a magnetic field sensor or as a flux-change sensor.
15. The switching device as claimed in claim 13 or 14, characterized in that the sensor (16) and the coupling element (17) are cast with each other.